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STATE OF ALASKA

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Alaska Department of Fish and Game

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Sport Fish Division

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ANNUAL REPORT OF PROGRESS, 1961-1962

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-3

SPORT FISH INVESTIGATIONS OF ALASKA

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INTRODUCTION

This report of progress consists of the job completion reports from the State of Alaska Federal Aid in Fish Restoration Project F-5-R-3, "Sport Fish Investigations of Alaska."

The current project is composed of twenty separate studies and was designed to evaluate the various aspects of the State's recreational fishery resources. The information gathered will provide the necessary background data for better management practices and for the development of future studies. During the current segment, continued emphasis was placed on the overall inventory and cataloging of accessible waters, evaluation of catch data, and investigations on various species of fish.

As a result of several problems of immediate concern, several new studies were instigated during the report year. Data accumulated from these studies has helped solve some problems in projects already in progress.

The population of Alaska is increasing rapidly and this is being reflected in the ever increasing number of "No Trespassing" signs put up by individuals in the vicinity of population centers. Fortunately, much of Alaska's fishery waters are still in the public domain. The division's program of acquiring access to fishing waters continued at a much faster pace since being instigated in 1959. Emphasis is being placed on this job and the successful continuation of this activity will forstall many serious recreational use problems currently facing other states.

The enclosed progress reports are fragmentary in many respects and the interpretations contained therein are subject to re-evaluation as the work progresses.

JOB COMPLETION REPORT

RESEARCH PROJECT SEGMENT

State: ALASKA Name: Sport Fish Investigations
of Alaska.

Project No: F-5-R-3 Title: Inventory and Cataloging
of the Sport Fish and
Sport Fish Waters in

Job No: 1-A Lower Southeast Alaska.

Period Covered: July 1, 1961 through June 30, 1962

Abstract:

Background information was reviewed for data on waters soon to enter the sport fishery pressure pattern by reason of improved access and angler demand. Creel census was continued on an angler voluntary basis of a number of freshwater locations and under a separate project for the saltwater segment.

Lake surveys were accomplished on four lake systems containing seven lakes. Additional survey work was done on two more lakes which promised better fisheries after rehabilitation.

Egg sources were investigated at four locations and the most promising produced 100,000 steelhead eggs. This location on Aleck's Creek, in Tebenkof Bay on Kuiu Island, is worthy of further development.

Recommendations toward better management were made.

Objectives:

To conduct lake, stream and saltwater surveys and evaluate the extent, the potential and the current use of the waters readily available to the area's anglers.

To investigate the sources for providing a supply of trout, charr and salmon eggs for experimental hatching and rearing.

To investigate the feasibility of, and formulate plans for, experimental rehabilitation.

To determine the relative need for future management investigations and to direct the course of such studies.

Findings:

The information from prior studies in sport fish investigations was used as a guide in the prevention of duplicate effort and the investigation of previously unsurveyed waters. The relatively accessible waters from the waterways and present road system rated the highest priority on the inventory schedule. Inaccessible waters or waters that are difficult to reach by reason of serious obstacles of topography or rough water crossings have been given a lesser priority at this time.

Harvey Lake, south of Petersburg on Woewodski Island, had been selected for rehabilitation on the basis of previous findings. However, upon rechecking with experimental gill nets, it was found that the fish population was mainly cutthroat trout and the rehabilitation was unnecessary at this time.

Lake and stream survey activity followed the plan outlined in the procedural program. Two lakes, upon which previous work had been done, were more thoroughly investigated. One of these, in the Petersburg area, checked out differently than initial work indicated. Work was not completed on the other.

✓ Harvey Lake had been reported to be populated with undesirable fish (predominantly stunted Dolly Varden). Intensive gillnetting between July 14 and 19 (18 gill net days) produced only cutthroat of a size range currently acceptable to sport anglers. The lake has a stickleback and cottoid population on which the cutthroat forage. No other fish were noted either by visual inspection or by test netting. The cutthroat population appears to be at a maximum level for the lake. The two major tributaries of the lake were

investigated and fish noted in both. A lake tributary to Harvey Lake from the south is reported, on good authority, to have cutthroat, this has not been confirmed. There are many extensive areas of pond lilies and other aquatic plants, both emergent and submergent, that would complicate chemical treatment of the lake. The outlet stream falls 93 feet in .6 miles. This was walked out and found to be impassable to anadromous fish. Harvey Lake is one of the few waters within reach of Petersburg favored with a sand beach and is used as a camping and fishing recreation area.

Whitman Lake, near Ketchikan at the southern extremity of the South Tongass Highway, has been under study for several years. The lake level was raised 30 feet by a concrete dam across the outlet as a result of a power development by the New England Fish Company many years ago. The power facilities were shut down and dismantled some ten years back. The City of Ketchikan acquired the water rights and has been attempting to redevelop this hydro-energy installation. No construction has been initiated to date. The lake is populated with a stunted Dolly Varden-eastern brook hybrid. There is little or no fishing pressure currently on the lake for lack of acceptance of the fish in it. There is a need of rainbow waters within reach of the Ketchikan road system, and this lake will produce rainbows. A plan for rehabilitation by the use of rotenone as the toxic agent is anticipated in the future. A volumetric survey of the lake has been made, but lacks the lengthwise transect of soundings. The fathometer was faulty when this measurement was attempted and the opportunity to get it has not presented itself to date. Negotiations by the Ketchikan City Council have slowed the development on this lake, and this situation is not apt to improve. Work will continue on the volumetric survey.

Other waters soon to be in demand by the pressure pattern of the area are the lakes in the Judy Hill section on Gravina Island (8), the lakes between Carroll Inlet and Moth Cove on Revillagigedo Island (18), Mahoney Lake and Perseverance Lake. Blue Lake back of Deer Mountain and the Upper Mahoney Lakes (2) will be checked as local pressure dictates. Both of these areas are alpine in character and rarely visited at the present time.

The history on the Judy Hill Lakes goes back a number of years. Several of them were planted with eastern brook trout in the early 1930's. Pressure on these waters is not heavy at the present time and it is not known if the plants succeeded in establishing a self sustaining population. The lakes are of the muskeg type, all below 200 feet elevation, with little water exchange except during the frequent rain storms. It is necessary that these waters be checked out for fish populations and and plants made when their need is indicated. This area is within easy reach of Ketchikan by skiff and trail and would receive considerable angler attention were they producing desirable species.

The group of lakes (18) north and east of Black Mountain on Revillagigedo Island between Carroll Inlet and Thorne Arm is another potential fishing area presently incompletely inventoried. Two of these lakes have been previously checked and one of them planted with eyed rainbow eggs. This plant has not resulted in a fish population. Some of the other 16 lakes are known to have fish populations, presumably cutthroat and/or Dolly Varden. A comparatively short trail system would open an extensive set of fishing waters now known to harbor rainbow, cutthroat, steelhead, Dolly Varden, pink, coho and chum salmon in the unbarriered lakes and streams. Many of the lakes are presumably barren and could be brought into the production of suitable and desirable sport fish. Access is by skiff less than three miles east of Mountain Point Light; a stretch of water that is seldom too rough to cross. This area would receive considerable use with access trails and a suitable fish population in those waters capable of supporting them.

The Mahoney Lakes system on Revillagigedo Island discharges via a creek by the same name into George Inlet about 7 1/2 miles from the entrance of Herring Cove. There are four lakes in the system, three are alpine and devoid of fish. Mahoney Lake itself is the lowest in the drainage and the largest of the group, and has a short steep outlet at elevation 76 feet, .3 miles from tidewater, up which sockeye and silver salmon are able to ascend. The lake is not producing the sport fishery it is potentially capable of. The extending of the Ketchikan road system has been

surveyed to pass very close to this lake. The upper lakes also are capable of producing fish and should be checked into with this in mind. This whole system will be inventoried at the earliest opportunity with the plan of an improved fishery completed when the proposed road makes it accessible via the South Tongass Highway.

Perseverance Lake, in the Ward Creek drainage of Revillagigedo, has been found in need of attention to improve the fishery. The lake is accessible from the Ward Creek Road by trail, about a thirty minute walk. There is a shelter on the lake and eastern brook trout and rainbow trout have been planted. Both were present at the last check, although the eastern brook trout were dominant. Anglers are not generally successful fishing this lake, even in the presence of a maximum population of brook trout. It has been suggested that the lake be rehabilitated to remove all the fish and restocked with rainbow. A survey will be made at the earliest opportunity to determine the status of fish numbers and species present. A volumetric survey will be made to assess the size and cost of possible rehabilitation. The lake will be progressively more important in the sport fishery in the next few years.

Surveys on waters of potential importance for future sport fisheries were made as opportunity permitted; waters that conceivably would be fished if a population of trout was established. All of these waters are either alpine or near timberline, with a common characteristic, none showing any evidence of fish populations.

The Sunrise Lakes on Woronkofski Island southeast of Wrangell are alpine and lie in the highest ground of the island. The upper lake appears to be the deepest and drains through a meadow into the second lake. This in turn drains into a third lake which lies at the 1975 foot (estimated) elevation. There is a barrier between the middle and upper lakes. The outlet at the lower lake discharges over a cliff a short distance downstream and is completely impassable. There is limited but probably adequate spawning area for either rainbow trout or grayling in the tributary to the upper lake and ample spawning area within reaches of both lower lakes. The lakes are within six miles of Wrangell by water and a two mile trail is present from the

beach. It is anticipated that this would be a popular recreation area for the people of Wrangell if the lakes were producing fish.

One lake (Kane Lake) at 2000 feet elevation 12 miles northwest of Petersburg on Kupreanof Island was checked by helicopter whenever possible. This lake lies under Kane Mountain and is too small for safe operation of conventional fixed-wing aircraft. The lake is deep, but has considerable shallows along the shores and several permanent tributaries that are adequate for spawning needs of a trout population. This lake is one of several that lie in old glacial cirques around the upper elevations of the Missionary Range. It is presumed that all of them are devoid of fish. It is not too early to stock this lake in anticipation of sport fishing developments of the Petersburg area.

A lake on Sherman Peak, six miles from Petersburg was also visited by helicopter. This lake is in a small cirque, at the 1960 foot elevation, and is quite deep. No fixed-wing aircraft can operate from this lake. The outlet appears to have adequate spawning ground for sustaining a fish population, but the inlets are small and go below the surface of the talus slopes through which they run. Sherman Peak Lake will support fish and it is close enough to Petersburg that it would be an attractive fishing location if a population of suitable fish were present.

The two Sundial Lakes are on the mainland off South Behm Canal between Rudyerd Bay and Wilson Arm of Smeaton Bay at the 1865 and 1890 foot elevation respectively. They drain into Punchbowl Lake through very steep falls and cataracts estimated to be over 800 feet high. These alpine lakes will support fish, but are barren at the present time. There is ample spawning area in the tributaries of the upper lake, but are meager in the lower one. Access is by aircraft at the present time and probably will be for many years to come. There is no demand for fishing in these lakes at present, although a change may occur in the near future.

Kay Lake, lying between Karta River and Hollis on Prince of Wales Island, was also checked. This lake is large enough for aircraft use and along the line of flight from Ketchikan to Craig and Klawak. It lies at an elevation of 1165 feet (estimated) above and to the north of the

entrance to Twelve Mile Arm of Kasaan Bay. There are adequate spawning grounds in the outlet for normal recruitment. The inlet waters pass through the gravel for a long distance above the lake shore and appear to be unsuitable as a spawning area. The lake is quite deep and will support fish. In view of its good location, it might be well to stock it as soon as practical. No fish were taken in this lake with varying mesh gill nets.

Access and accommodations in Southeastern Alaska generally are not the same as in the 48 states to the south. Relatively few are available from the very limited road systems and most are in remote country. The U.S. Forest Service, in its recreation program for the Tongass National Forest which encloses most of Southeastern Alaska, is maintaining trails and shelters on a considerable number of good fishing locations. Many of these areas can be reached by boat and trail from the beach, but others are accessible only by amphibian plane. There are several resorts for saltwater anglers where boats and accommodations are available. This is true of the Juneau and Ketchikan areas particularly. Private property, as an obstacle to access for fishing, is not one of the fishery problems at this date in Southeastern Alaska, however it may not always be so.

A survey and creel census of the saltwater fishing of Southeastern Alaska was made and is reported on in another section. Generally speaking, salt water species of fish supporting the sport fishery are available in part throughout the year. The king salmon peak in the catch during May and June but may be taken as "feeders" during all of the remaining months. The silver (coho) and pink (humpback) salmon also support a fishery in late summer and early fall and are not usually taken during the other months. Bottom fish may be taken all year long.

Freshwater fish distribution is seasonal in the waters accessible to anadromous fish. Steelhead are available from late summer through to late spring in the lake drainages. With them are Dolly Varden, cutthroat and rainbow. These three may also be taken all through the summer months. The salmon enter the freshwater in July and the silvers and pinks are accepted in the sport fishery as long as they are in good

condition, usually until the end of October for silvers and the end of August for pinks.

The lake fisheries are on cutthroat, Dolly Varden, eastern brook and rainbow. Most of the lake fisheries exist only when the lakes are free of ice, as amphibian aircraft are a common means of transportation.

Creel census data is contributing little to the known distribution of sport fish. Anglers are not willing to go to any expense to prospect a lake when so many proven waters are known. Also, contacting anglers or getting any information from this exploratory fishery is difficult at best. Experimental gill nets are used as a follow-up on sport gear checks where no fish were found.

An attempt to obtain creel census data by a voluntary reporting system was carried on again this year. Considerable information was obtained from a number of popular locations. By also checking air charter services, stream guard reports and other sources, a reasonable idea of the pressure on the waters under study can be had. The results of this effort are as shown on Figure 1.

Using the estimate of 40% and from it extrapolating an estimate of the total fresh water fishing pressure, we then have a conjectural fix of 1118 anglers at these 13 locations taking 8052 fish in 7175 hours. It must be taken into account that, included in these 13 locations, are fly in lakes, roadside and boat accessible fishing spots. The ratio of each is about the same for Southeastern Alaska as a whole. To go further with estimates is to surmise with unrealistic confidence limits, and it may best be said that the total fresh water fishing pressure is several multiples of the above figures.

An example of the latitude that can be seen in creel census figures depending on how the data was collected is noted for the Naha River. A streamguard stationed at the moorage in the river mouth recorded 274 man days of fishing pressure on the stream. By his own word, he felt that he had recorded 85% of the pressure between June 28 and September 14. This in turn was judged to be 70% of the annual fishing pressure on the stream; all estimates on the conservative side. A total annual pressure arrived at by this

VOLUNTARY CREEL CENSUS DATA 1961

	Mar.		Apr.		May		Jun.		Jul.		Aug.		Sep.		Oct.		Total Anglers	Total Fish	Total Hours	Grand C/ue	Fish/ Angler		
	Ang.	C/ue	Ang.	C/ue	Ang.	C/ue	Ang.	C/ue	Ang.	C/ue	Ang.	C/ue	Ang.	C/ue	Ang.	C/ue							
Hasselborg L.					5	2.25	16	1.25	7	2.24	4	.92	2	2.0			34	550	404.5	1.36	15.3		
Turner L.					2	0	2	.13	4	0	12	.87					20	69	106	.42	8.3		
Young's L.					3	0	9	.80	13	.98	9	1.09					34	160	111	.88	4.7		
Salmon Cr. Res.			2	0			21	1.09	10	1.01							33	141	134	1.05	4.6		
Montana Cr.									32	1.26	16	1.71	6	.33	2	.20	56	194	158.5	1.21	3.34		
Petersburg L.					3	1.13	2	2.25	6	.75	2	2.5					13	119	111	1.07	8.5		
Kah Sheets L.&Cr.							6	1.2	7	.28			1	2.0			16	76	212	.36	4.75		
Castle R.	1	0	6	2.4	6	2.33			2	8.7	2	5.5					17	113	47	2.4	6.28		
Virginia L.			9	1.0	9	2.45	24	1.09	28	1.5			4	.94			74	736	564	1.29	9.7		
Wilson L.			9	1.44	2	1.5			16	1.94	17	.83					44	449	395	1.14	10.2		
Naha R.	(Jan.) 3	.25	8	.70	15	1.03			24	1.11	2	.55	5	.75			57	330	321	1.05	5.8		
Patching L.									3	1.96	1	2.33			1	7.5	5	82	35	2.28	16.4		
Fish Cr.	3	0	10	1.61	3	1.28	15	.69	10	.67	4	4.15					45	202	210.5	.76	4.5		
Final	Jan.																						
Total	3	.25	4	0	44	1.32	48	1.52	97	.98	162	1.32	69	1.47		.86	3	2.63	447	3,221	2,870	1.17	7.2

The above data is from 13 voluntary reporting locations and is estimated to be approximately 40% of the total effort at these locations.

reasoning is 460 man days. The voluntary data station for the year recorded 57 man days. In the process of checking, an employee was detailed to note the number of anglers on the stream and the number of report slips they filled out. On the Naha River on seven weekend days, 24 anglers were seen on the stream and they filled out five census slips, which accounted for seven of the anglers. The same sort of a check was conducted at Fish Creek (21 miles from Ketchikan) and no valid data resulted. The light fishing pressure did not justify a full time census taker on even the most popular sport fishing stream in the Ketchikan area (Naha River) but nothing short of a full time checker will result in positive coverage.

A check of one of the Ketchikan Air Service flight card records 25 anglers to Patching Lake. The census station gave information on five anglers. The same source showed forty anglers into Wilson Lake and the voluntary data stations (two) showed 44 anglers. There is unrecorded activity by private aircraft to further upset reliability of the data.

The voluntary creel census stations were removed at the last check made in 1961.

The writer checked and recorded the number of anglers as often as he was able to get afield during the winter steelhead fishery. The weather is commonly inclement, keeping all but the "hard cases" at home. It was not unusual then to find no anglers on waters providing excellent steelhead fishing.

The chemical and physical properties of the waters in Southeastern Alaska are quite consistent the year-round, and from year to year. The characteristic deep lakes carry dissolved oxygen at or near saturation all year long. The streams being mostly rugged are the same way. The waters of the high lakes are clearer than the lower ones in the timbered areas where considerable organic stain (muskeg) often makes the water look like weak tea. Hydrogen ion concentrations are on the acid side down to 5.8 in some of the lower lakes. Dissolved solids seldom run over 20 parts per million due to the high rainfall and exchange rate in the lakes.

Water temperatures are what can be expected for an area with this climate. Surface lake temperatures occasionally

reach 70°F. while ice covers last from November to May with the higher lakes opening as late as July or sometimes not at all above 4,000 feet.

It is interesting to note that winter stream temperatures vary little (average 35.5°F). When the steel-head streams are at this point the fish will take bait or lures if the day is bright or sunny, but usually not until after midday.

Spawning areas are adequate for population recruitment in most streams that fish are able to ascend. The high run-off imposed by the heavy rainfall this region enjoys has provided gravel areas at most stream mouths on lakes and in the larger creeks and the rivers.

Fertilities are not what they possibly once were, due to depletion of salmon runs. Also, it is to be expected that, where a fishery removes large numbers of the returning adults of an anadromous population, stream use will not be what it would have been if the runs were unexploited. Potentially then, there could be greater use and production from the waters of Southeastern Alaska.

Land surfaces of Southeastern Alaska are of the sharp contour type. This then makes for deep lakes and steep stream gradients. Since glaciation and the resulting upthrust of the land has been relatively recent, normal erosion has not smoothed the contours or filled in the glacial gouges which hold most of the lakes. The stream beds are characteristically rocky or, in many instances, have bedrock overlaid thinly with gravel.

Productivity is not high from the relatively pure waters of the district. The fisheries on the resident stocks of the fresh water are not heavy enough to seriously deplete populations in most cases. Where fish are able to traverse a stream both ways, anadromous runs have developed. The low human population densities of the district do not tax resident fish beyond their ability to maintain normal numbers. Those species supporting commercial fisheries, however, are certainly not what they once were.

Several potential egg sources were investigated and a trial spawn take was made at one location, a stream at the

head of Bay of Pillars on Kuiu Island. The stream is short, draining a lake less than one half mile above the tideflats. The weir site was established at the lake outlet where high water flows could be handled. It is not known how many steelhead use the system, but silver salmon and sockeye salmon are known to run in good numbers. Cutthroat and Dolly Varden are also common.

The stream at the head of Gut Bay on Baranof Island was also checked. There are a few steelhead and cutthroat here, but Dolly Varden, silver and sockeye salmon are plentiful.

Wilson Cove stream on Admiralty Island was also checked. There is a spring run of steelhead here and a good silver salmon run. The stream shows evidence of having recently flooded the valley floor. This would make holding any sort of a weir very uncertain.

Aleck's Creek on Tebenkof Bay on Kuiu Island was checked while working on another project during the spring. Later, another check proved that this would be a very promising site. The primary project necessitated a weir and thus provided an egg taking site. The steelhead run was trapped and/or seined. One hundred thousand steelhead eggs were taken and it is estimated that possibly another 50,000 would have been available if time had permitted. The fall inspection showed a good run of silver salmon. Sockeye are known to use the system. Relatively few cutthroat passed through the weir which was located near tidewater. However, pink salmon were in such numbers on the September inspection, that it created a problem of separating out the desired fish. Dolly Varden were present in large numbers. This location has real potential as a spawn taking site.

Recommendations:

Recommendations for management of the sport fishery follow a pattern of restrictions covering previously unforeseen situations that have been brought to notice over the past year. No major changes are involved and it is anticipated that no hardship will be caused to anyone.

In view of the decline of king salmon and the restrictions on their take in saltwater, it is no more than right

that unrestricted take of these fish from the meager stocks on the spawning grounds of Southeastern Alaska be stopped. With the availability of these fish in salt water being greater and in prime condition, there is no justification for taking the escapement fish that have lost their prime-ness upon entering fresh water. The king salmon escaping the fishery and entering fresh water to spawn should be spared to do so and not be subject to further decimation by a fishery on the spawning grounds.

Silver salmon have shown themselves to be quite vulnerable to a sport fishery in fresh water. Previous to this time, there has been no appreciable take of these fish from the freshwater due to a quality decline and very low angler acceptance. This could not long endure. Before precedence establishes a pattern of normalcy for the unrestricted freshwater catch of these fish, it will be well to set up a liberal bag limit that is ample for home use and discourages wastage. It is felt that five silver salmon per angler per day with no restriction on adult fish under 20 inches in length will meet home use needs and preserve good sport for all freshwater silver salmon anglers.

Previous studies have shown that the use of treble hooks is particularly lethal to undersize king and silver salmon. Fish taken on these hooks often are mortally injured and, if released as specified by law, die from their injuries. It is felt that no hardship would be worked on salmon anglers by a ban on the use of treble hooks in the saltwater fishery on salmon.

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